

IGNOU HANDBOOK 5

SELF-INSTRUCTIONAL COURSE UNITS



**Division of Distance Education
Indira Gandhi National Open University
New Delhi**

“Education is a liberating force, and in our age it is also a democratising force, cutting across the barriers of caste and class, smoothing out inequalities imposed by birth and other circumstances.”

– Indira Gandhi

Community Health Cell

Library and Documentation Unit

367, “Srinivasa Nilaya”

Jakkasandra 1st Main,

1st Block, Koramangala,

BANGALORE 560 021

और आज
आधार भी
एवं वर्गगत
सबसे ऊपर

– इन्दिरा गांधी

IGNOU HANDBOOK 5

SELF-INSTRUCTIONAL COURSE UNITS



Division of Distance Education
Indira Gandhi National Open University
New Delhi

IGNOU HANDBOOK 5

Self-instructional Course Units

Prepared by

B.N. Koul and Sohanvir Chaudhary
Division of Distance Education
IGNOU

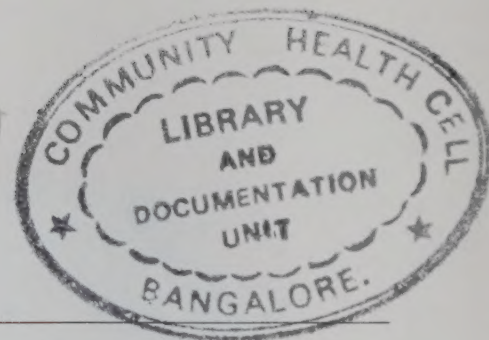
Production

Major Gen. G. S. Wirk (Retd.)
Registrar (MPDD)
IGNOU

Mr. Balakrishna Selvaraj
Production Officer (MPDD)
IGNOU

EDU-100

05333



© INDIRA GANDHI NATIONAL OPEN UNIVERSITY, 1989

January 1989

All rights reserved. No part of this work may be produced in any form, by mimeograph or any other means, without permission in writing from the 'Indira Gandhi National Open University'.

Further information on the Indira Gandhi National Open University may be obtained from the University's Office at K-76, Hauz Khas, New Delhi-110 016.

Printed at Raj Bandhu Industrial Co., C-61, Mayapuri-II, New Delhi - 110064

FOREWORD

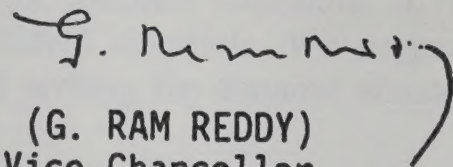
I am happy that the Division of Distance Education is bringing out a series of Handbooks on various themes—Distance Education, Study Skills, Unit design, Editing, Electronic media, Counselling, Assessment of assignments and Technical terms in use at IGNOU.

It is common knowledge that Distance Education is a mode of education that is very different from the conventional systems of education, and also that in the existing situation a developing country like India needs a powerful mode of education like Distance Education, to fulfil the long-cherished constitutional obligations of providing equal opportunities for socially relevant education to the masses of the country of whom only 36% are claimed to be literate.

With these two points in view it follows that the system of Distance Education needs to be adopted wholeheartedly and nourished carefully to achieve the national educational goals. For this, experts in various operational areas of Distance Education, as indicated by the above themes, are needed at various levels of instruction. Needless to say that the operations need a high level of expertise for successful implementation.

Though the operations like editing, counselling, assessment etc. are commonplace, in the domain of Distance Education they obtain connotations different from what is normally understood of them. Besides, Distance Education Institutions will have to depend on human resources drawn from the conventional institutions. In order to bring these human resources to the required level of expertise, they need full time training in certain cases and in certain others a minimum required orientation. To achieve this latter end the publication of these handbooks is timely and welcome.

I hope the handbooks will be of immense use to various functionaries, especially in the area of academics, who are already engaged in or intend to engage themselves in promoting Distance Education in the country.



(G. RAM REDDY)
Vice-Chancellor

Indira Gandhi National Open University
NEW DELHI

STRUCTURE

Page

1 Introduction

5

2 Self-instructional Materials

5

2.1 Terms Used

6

2.2 Self-Instructional Materials v/s Conventional Instructional Materials

8

2.3 Characteristics of Self-Instructional Materials

8

2.4 Learning Activeness

9

2.5 Access Devices

10

3 Some Basic Concepts

11

4 Developing a Unit

17

4.1 Beginning the Unit

17

4.2 Main Body of the Unit

23

4.3 Ending the Unit

36

5 Review of the Unit

38

6 Summary

39

1 INTRODUCTION

This handbook is meant for those who are working or intend to work in distance education systems, and also for those who want to know how to develop self-instructional materials for distance learners. In this document we have tried to explain the functions of a course writer. Our intention is to show you how the experience you have gained in face-to-face teaching can be utilized effectively for the new assignment of writing for distance learners. The objective of this handbook is to help you acquire reasonable skills/confidence to write self-instructional materials.

After going through this handbook you should be able to formulate objectives, choose appropriate subject matter, decide on the best sequence of the items to be taught, design assessment questions and evaluate your materials.

It is a fact that the success and effectiveness of distance education systems largely depends on the study materials. Thus, in developing self-instructional study materials, the course writers have a crucial role to play. Writing for distance education is a more challenging task and quite different from that in face-to-face teaching or writing for a book or a journal. Self-instructional materials depend on exploiting the various means and ways of communication to suit it to the needs of learners. But based on our own experiences and the experiences gathered from other distance education institutes/universities, we should be successful in developing a viable, effective and manageable model/format to suit our Indian conditions. The format, we discuss in this handbook, is flexible to accommodate further improvements. We admit that this is not the best and the final format for developing self-instructional materials.

In this handbook we have also tried to show how self-instructional materials can perform the functions of a live teacher, and thereby how a distance learner may have all the learning experiences which a student may have in a classroom situation.

This handbook is the fifth one in a series of handbooks for distance educators. It has six sections covering the entire process of writing self-instructional materials. We suggest that you should study this handbook thoroughly before you start writing for distance education.

We hope that this booklet will not only be useful to you but also to all those who work in distance education institutions. It will also fulfil the needs of new distance education institutions in India. We welcome suggestions to improve the format we have presented herein and to develop better and dependable models for writing self-instructional materials.

2 SELF-INSTRUCTIONAL MATERIALS

Teaching through self-instructional materials is catching on through out the world — in the developed as well as the developing countries. This mode of education will continue to flourish as more and more distance education institutes/universities are coming up to meet a variety of educational needs of the ever increasing number of learners. Besides subject based teaching, much professional and industrial training is now imparted through self-instructional packages. Such materials are needed for in-service education, life long education, etc.

Self-instructional materials (SIMs) are designed for both on site and at a distance learners to use on their own. SIMs include all the text prepared to stimulate independent study/learning. The learners in distance education have less contact with either the institution or the tutor, and

depend heavily on these specially prepared teaching materials — largely pre-planned, pre-produced and pre-packed.

2.1 Terms Used

There are quite a few terms which are frequently used in distance education. You, as a course writer, should be familiar with all the important terms relevant to the business of writing self-instructional materials. Before we go further, it would be worthwhile to understand some of these terms, especially the ones which are in use at the Indira Gandhi National Open University (IGNOU)

i) **Programme:** By a programme, we mean the curriculum or combination of courses in a particular field of study. For examples, Undergraduate programme, Diploma programme in Management, Diploma programme in Distance Education, M.A. programme in English, etc.

ii) **Course:** The programme is divided into courses. In conventional education, when we talk of a course, we usually refer to a subject and level such as post-graduate chemistry, primary level maths, undergraduate biology and so on. In distance education the term 'course' includes more than this. It is used to describe the teaching materials and other components of the study. A typical distance education course will, for example, consist of a number of texts, audio and video components, contact sessions, assignments, library work, laboratory work, project work, etc.

Thus, each course consists of a few printed booklets called Blocks, a few audios, a few videos, some assignments and whatever else may go with it.

Going back to the expression programme, the point to remember is that a PROGRAMME consists of a few COURSES. For example, an Undergraduate Programme may consist of a course in Physics, a course in Chemistry, a course in Mathematics and a course in a language. Programme is, thus, a superordinate term and Course a subordinate one.

iii) **Block:** A course is divided into 'blocks'. The block appears in the form of a booklet of around 60/80 printed pages. Generally each block presents one unified theme.

The text materials is sent to the learners in the form of blocks as a learner may feel a greater sense of achievement each time he completes a block. A single 'big' book can be threatening from the pedagogic point of view.

Again the point of remember is that each COURSE consists of a few BLOCKS which appear as booklets.

iv) **Unit:** The term 'unit', of course, the context is that of IGNOU, is used to denote a division of a block, at one level in terms of the theme or topic and at another level as the material used to teach the topic.

A unit, is a self-contained portion of a block covering one or more interwoven learning concepts. Each unit is broken into sections and sub-sections for the clarity of the presentation of concepts, information, illustrations, etc.

Each unit is, thus, an individual lesson and fits into the block it belongs to. It contains orientation for learners, introduction to the content, explanation of the topics covered and exercises to help them learn the material.

All the units of a **block** are logically, and also thematically, linked with each other.

At some institutions, units are called 'lectures', 'lessons' or 'chapters'. But the word 'unit' is commonly used among distance educators today.

The length of a unit is also an important feature to be taken into consideration. IGNOU courses have a unit of 5,000 to 6,000 words or 25+ to 30 – typed (double space) pages (A4 size paper) approximately. This amounts to about 15-17 printed pages. This kind of thrust has been built on the basis of following three considerations:

i) **Pedagogy:** Keeping in view the skills, attention span and study habits of the learners, the content load should be appropriate and manageable. A unit is a pedagogical unit that can be completed by a learner within a reasonable period of time, say for example, 5-6 hours, i.e., at the most three sittings. Pedagogically, the best unit is the one that can be completed in one sitting. But, then, there are constraints of thematic continuity, economy, bulk of print materials etc. which force us to opt for a unit of a larger size. However, it should not be too large to defeat the very purpose for which it is prepared.

ii) **Uniformity:** All the IGNOU's units should display a reasonable degree of uniformity for other reasons. For example, unit writers have to be paid according to uniform scale, for which the unit size has to be standardised.

iii) **Printing:** Distance education institutes have to produce a standardised output, i.e., to have a specified size and length of each unit/block, as the printer has to be paid for a particular size of a booklet.

All the units, blocks and courses of a programme are interrelated. Their heirarchical relationship is presented with the help of the following scheme:

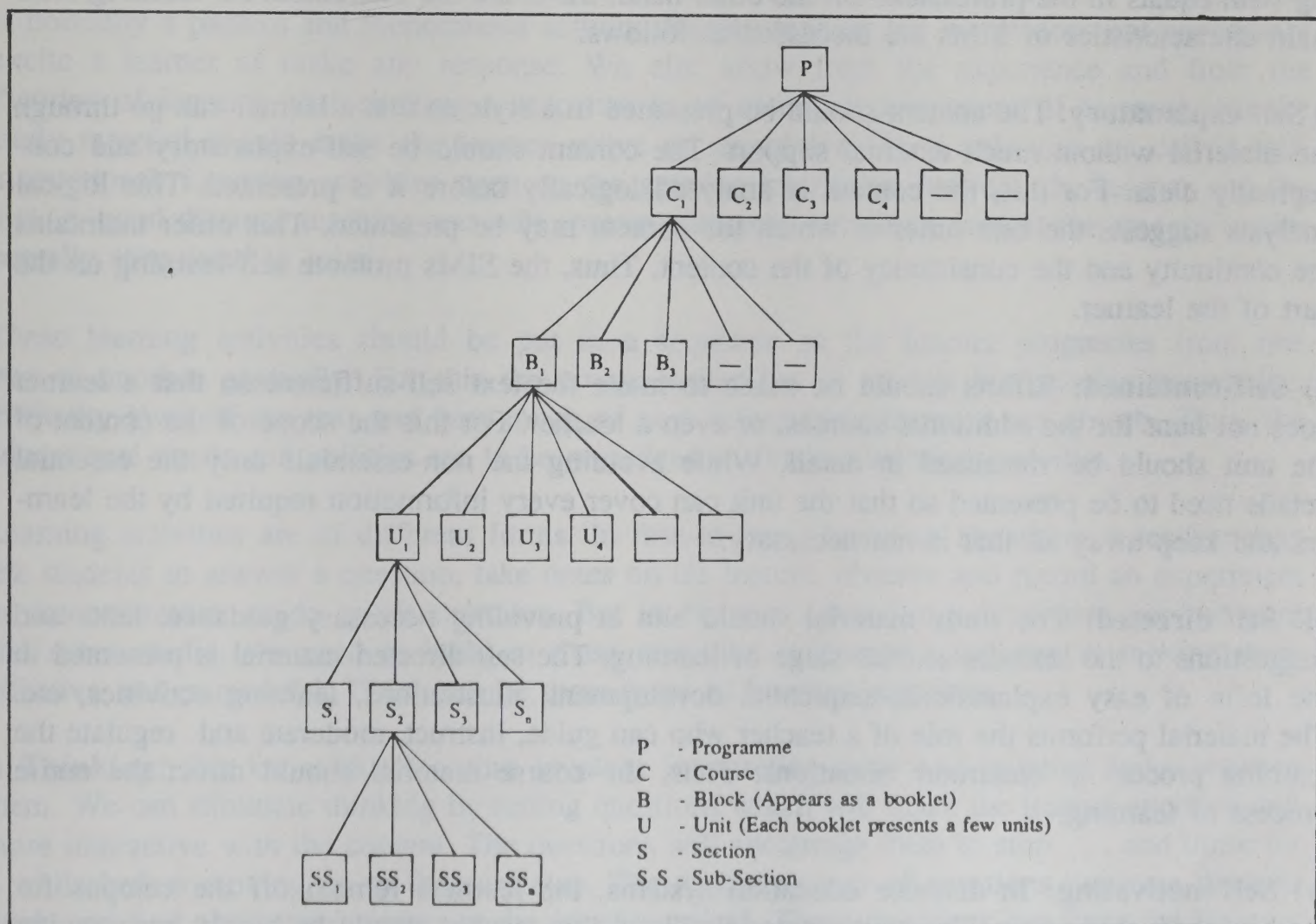


Figure 1: Heirarchical Linkage Scheme

2.2 Self-instructional Materials v/s. Conventional Instructional Materials

Let us start by reflecting on the similarities and the dissimilarities between face-to-face and distance teaching. You may discuss this issue with those who are directly exposed to the distance education systems or who have first hand experience of these two forms of teaching. A discussion of this type will help you to shape your thinking about distance education besides pin-pointing the possible difficulties you may face as a course writer.

In the conventional system of education, the students get most of their instruction through face-to-face interaction with a teacher and they attend classes regularly in peer groups. The students under this system use the already existing text materials. No special materials are developed for these students. Self-instruction, on the other hand, depends on the materials specially prepared or transformed for a target group. In self-study, the learners get very little opportunity to interact with the teachers and peer groups in classroom situations. This loss is compensated by a special kind of self-learning material which includes all the study materials developed to stimulate independent learning.

The course materials are presented in such a way that a learner can learn from the material independently as it carries out all the functions of a teacher, such as guiding, motivating, expounding, explaining, provoking, reminding, etc.

2.3 Characteristics of Self-instructional Materials

Self-instructional materials (SIMs) differ from a chapter of a textbook or an article of a journal. The chapters of a textbook usually present information in a very compact form. They are closer to reference material than to learning texts. They are organised in terms of the subject matter rather than to aid learning. Similarly an article in a journal is a means of communicating with equals in the profession. On the other hand, SIMs are the instrument for learning. The main characteristics of SIMs are discussed as follows:

i) **Self-explanatory:** The content should be presented in a style so that a learner can go through the material without much external support. The content should be self-explanatory and conceptually clear. For this, the content is analysed logically before it is presented. This logical analysis suggests the best order in which the content may be presented. This order maintains the continuity and the consistency of the content. Thus, the SIMs promote self-learning on the part of the learner.

ii) **Self-contained:** Efforts should be made to make the text self-sufficient so that a learner does not hunt for the additional sources, or even a teacher. For this the scope of the content of the unit should be visualised in detail. While avoiding the non-essentials only the essential details need to be presented so that the unit can cover every information required by the learners and keep away all that is not necessary.

iii) **Self-directed:** The study material should aim at providing necessary guidance, hints and suggestions to the learners at each stage of learning. The self-directed material is presented in the form of easy explanations, sequential development, illustrations, learning activities, etc. The material performs the role of a teacher who can guide, instruct, moderate and regulate the learning process in classroom situations. Thus, the course material should direct the entire process of learning.

iv) **Self-motivating:** In distance education systems, the learners remain off the campus for most of their study-time. The study materials like a live-teacher should be highly encouraging

for the learners. The materials should arouse curiosity, raise problems, relate knowledge to familiar situations and make the entire learning meaningful for them. The sense of reinforcement should be strengthened at every stage of learning and retention.

v) **Self-evaluating:** As the learners remain separated from the distance institution and the teachers, the study materials should make provisions for feedback as well. To ensure optimum learning, the learners should know whether they are on the right track. Self-evaluation in the form of self check questions, exercises, etc., provides the learners with the much needed feedback about their progress, reinforces learning, and motivates them for learning. The course writer should develop a built in evaluation system by giving an appropriate number of self-check exercises, activities and 'check your progress questions'.

vi) **Self-learning** Self-instructional materials are based on the principles of self-learning. So a unit, besides information, provides the learners study guide — directions, hints, references, etc., — to facilitate their independent learning. To make the content comprehensible, it is supported by simple explanations, examples, illustrations, activities and so on.

2.4 Learning Activeness

Simply reading the unit will not guarantee learning. The material has to be such that the learners can interact with the text and learn the material better. This characteristic of SIMs is known as learning activeness. A unit is said to be learner active if it has the potential to motivate the learners to sit up and be engaged in various types of academic activities such as jotting down points, explaining the concepts, collecting materials, applying what has just been learnt to a new situation, doing self-check exercises, writing assignment-responses and similar exercises. Such built in strategies make a unit **learner active** and pedagogically purposive.

You know that reading a text or listening to a radio programme, or viewing a TV programme is normally a passive and monotonous activity. Simply reading the words does not necessarily excite a learner to make any response. We also know from the experience and from the theories of learning that eliciting a response is an essential component of learning. So the study material should make the learner active or responsive. Then only can we call it self-instructional. Learning activities open up the genuine interaction between the learner and the text. A good distance teaching text will contain numerous activities, so that the student is perpetually stimulated to learn.

These learning activities should be put in a sequence as the learner progresses from one step to another gradually. For this the course writer has to exploit his existing knowledge, difficulty level of the text and how much of new information learners can absorb. Thus, the educational needs and abilities are to be prejudged to finalise learning activities.

Learning activities are of different forms. In face-to-face classroom situations, a teacher may ask students to answer a question, take notes on his lecture, observe and record an experiment or demonstration, or do quick exercises. But in distance education, which uses passive print and other media, we need to build in these activities deliberately and aim at making them effective and purposeful. There can be three types of learning activities.

i) **Thinking:** We know that learning involves interpreting facts and building links between them. We can stimulate thinking by setting questions which will make the learner attentive and more interactive with the content. The questions will encourage them to stop . . . and think for a while before moving on to the next step. The multiple types of questions motivate them to think and find alternative answer to the question asked. These questions can force the learners

to think on the issue being discussed and can draw their attention towards the content. Besides thinking, such questions will assess learners' retention.

ii) Writing: Writing exercises help the distance learners consolidate what they have learnt in the unit. Writing the points down also makes them attentive and active.

The unit writers should take care of difficulty level required in such questions. As there is no one on hand to provide additional help, these questions should be geared to the level of the average learner. The main purposes of giving these questions are to give reinforcement, and to give practice in using the information which they have just gone through. Thus the simple activities can serve the purpose in many circumstances. But as our learners are adults, these activities should involve some sort of thinking.

There can be several types of writing exercise:

- Copying or writing from memory. It is simply a way of strengthening the memory by repetition. For example, list three stages of text production.
- Answering questions which involve extending what has just been learnt to other items in the same area. For example, practising an arithmetical process, formulating aims and objectives in your subject.
- Applying what has just been learnt to a new situation. For example — in the Indian context, which one may be better — the course team approach or appointing part-time course writers? Give at least three reasons to support your answer.
- Answering questions designed to test comprehension. For example, explain the functions of an assignment.

These activities provide periodic checks on the learning of distance learners.

iii) Doing: The third type of learning activity is 'doing' something practical. It is said that one learns best by 'doing'. In the courses such as geography, science, etc., in which we wish to develop certain skills, some practical exercises or activities should be given to the learners. The text can be clubbed with practical exercises. For example, the learners of Diploma in Nutrition can be asked to prepare different nutritive food items.

In some courses, learners can be organised into groups at study centres and given opportunities to perform skills, experiments, etc. The course writers have to make room for such activities within the materials. These activities can be of different types such as conducting experiments in science, reading of maps, going on study visits to collect information, etc. The course writers should note that the activities listed above are illustrations only. A range of this variety of activities depends on the resourcefulness and interests of course writers.

2.5 Access Devices

Access devices are those devices which help the course writer go as close to his learners as possibly he/she can, and help the learners come as close to the content as he/she can. These devices also help the learners find their way into the text. There are three main functions of these access devices:

- They enable learners to find what they need to read in the unit, i.e., the means and ways to reach the content.

- They make the content more intimate to learners and help them grasp what is presented in the unit.
- They perform the functions of a live classroom teacher, i.e., build a teacher in the text.

Some of the access devices are explained below:

i) **Title:** We should give our unit a clear title, a title that can tell the learners what the unit is about. For example, to give the title 'Distance Education' is not enough. It should be more explicit and clear, for example, 'The Process of Course Production in Distance Education'.

ii) **Structure of the unit:** The structure with itemized sections and subsections should be given in order of the occurrence of the content in the text. The structure draws the learner's attention to the subject matter. For details see subsection 4.1.

iii) **Objectives:** The objectives of the unit should be defined clearly in behavioural terms. We shall discuss this issue under subsection 4.1.

iv) **Division of content:** To make the content easily accessible, we divide the units into sections and subsections for easy reading and better comprehension. Each section is indicated distinctly by **bold capitals** and each subsection by relatively smaller **but bold** typeface. The significant divisions within sub-sections are in still smaller **bold** typeface so as to make it easier for learners to see their place within sub-sections, and the items which need to be highlighted are numbered (i.e., (i), (ii), etc.). For purposes of uniformity we have employed the same scheme of 'partitioning' in every unit throughout the IGNOU courses. Generally we begin each Unit with the section **Objectives**. It articulates briefly.

- What we have presented in the unit, and
- What we expect from learners once they complete working on the unit.

In the last section of each unit, under the heading 'Let Us Sum Up' we summarise the whole unit for purposes of recapitulation and ready reference. In place of the expression 'Let Us Sum Up' we may use some other expressions, such as **summary** or the like.

Besides, we give self-check exercises under the caption 'Check Your Progress' at a few places in each unit which invariably ends with model answers to the questions set in these exercises.

v) **Illustrations:** The content should be supported with appropriate illustrations, diagrams, charts, graphs, photographs, etc. A concept map or flow diagram can show the interconnections of the content more clearly.

vi) **Glossaries:** Adequate glossaries of keywords, new concepts, and technical expressions should be given in the text after the **summary**.

vii) **Instructions:** We should remember that our learners are physically separated from the institutions. So precise and unambiguous instructions as how to go through the unit should be given.

3 SOME BASIC CONCEPTS

We have tried to make it clear that the distance education systems function differently from the conventional education systems. A course writer, therefore, needs to know what the systems of distance education are. Some of the prerequisites for course writing are discussed as follows.

i) **Familiarity with the system:** The course writer should be well aware of the instructional system/methods of distance education institutions. IGNOU provides educational opportunity for those who could not have access to the formal system of education due to one or the other reasons — employment compulsion, social and domestic constraints, economic backwardness, geographic remoteness, etc. Based on this assumption, an open distance learning system has been adopted to make relevant education more accessible to larger numbers.

Under this system, education takes place through the technique of distance teaching and learning. The learners study on their own at their convenience and enjoy the facility of self-pacing. It is assumed that all the learners are highly motivated to achieve their predetermined objectives. And this motivation has a powerful bearing on distance education system — be it on the content or on the design of the syllabus.

Distance education institutions have an industrial system of working in which every process/stage of production is time-bound. So if you take up the job of writing a unit or a block, you should be committed and should make best efforts to complete the job in time, otherwise the production schedules fail, and any such failure amounts to the failure of the entire system.

Correspondence Vs. Distance Education

Correspondence education in India and elsewhere in the world has a reasonably long history and tradition. About 150 years ago, when postal system was used for educational purposes for the first time in England, the conventional educational system, brought correspondence education within its gambit, as one of its sub-domains. To all intents and purposes this new addition remained unnoticed for years, though the proliferation of courses given through correspondence went on unabated. It is only during the last 18 years, with the beginning of the British Open University in England, that distance education emerged as a concept different from correspondence education. Distance educators themselves took more than ten years to finally realize that they were more than correspondence education — it was during the Twelfth World Conference of the International Council for Correspondence Education (ICCE) held at Vancouver in 1982 that the council was renamed as the International Council for Distance Education. Very often, distance education and correspondence education are thought of as synonymous. However, the scope of distance education is much wider than correspondence education. Distance education differs from correspondence education in its purposes, orientation and media through which education is imparted.

Let us first see, how correspondence and distance education vary in their objectives. For long, correspondence education as an appendage of conventional educational system, has had its main purpose as preparing students to sit for regular board or university examinations. Whereas correspondence education becomes an extension of conventional education as far as its imparting of prescribed knowledge for issuing of certificates is concerned, distance education aims at more varied goals. These include personal growth, training for better job prospects and job enhancement, i.e., in-service training, life long and continuing education, a change in attitudes in addition to imparting of knowledge. Above all, distance education has a social purpose, which the correspondence education has ignored throughout. By tradition, higher education has been the privilege of a few. Education has been an elitist pursuit, with only a few belonging to higher economic and social class having access to it. Distance education is a means of education for masses. At the same time it tries to fulfil the constitutional obligation of equal opportunities to all. Distance education promises much more by way of educational opportunities by extending its reach to one and all, undoing all the traditional known constraints — non-availability of seats in educational institutions, non-availability of such institutions in geographically difficult terrains, poverty of aspirants, etc. Not only does distance education make education accessible to masses, it also makes education more socially relevant. It offers the types of courses and education that people need, not only in order to become

better in their professions, but also better citizens and human beings, aware of their rights and duties. Distance education by virtue of what it does and can do is an important means of democratizing education.

Correspondence and distance education differ in their orientation also. Whereas correspondence education is essentially a name based on the mode of the distribution of didactic materials, it is simply oriented towards imparting of information. On the other hand, distance education is oriented towards pedagogy, that is, effecting the process of learning/teaching. It tries to build the teacher in the course material itself. Through various means, effective academic communication takes place between the teacher who is away from the learner in physical terms and the learner. No such communication is envisaged in correspondence education.

As far as the means of imparting information are concerned, correspondence education refers to traditional type of education given mainly through printed materials, by the postal system. On the other hand, distance education refers to non-traditional innovative type of education that uses all the possible means of communication, that is, a multi-media approach including the human contact. The other media involved in a multi-media package in addition to print are audios, videos, radio and television broadcasts, computers, etc., as well as face-to-face sessions. With the advances in communication technology, distance education has tried to incorporate advanced strategies and technologies of communication. However, this is not to mean that electronic media can be used indiscriminately, just because the system accepts and follows a multi-media approach. What has to be done is to make optimum use of each medium. What goes best through print, should be necessarily imparted through print only. Similarly, for certain concepts that can be put across through audio or video only, audio/video may be used.

Open Education

Often 'distance education' is confused with another term, that is, **Open education**. Open education refers to that kind of non-conventional education which has been weaning away from the conventional constraints that characterise the traditional university education. Certain features associated with open education are non-restrictive admissions, multi-point entry, no age and qualification restrictions, no attendance restriction, teaching at a distance in a non-contiguous manner, no restrictions on the period of time devoted to a course, no restrictions on the number of examinations given and taken in a year, no restrictions on subject combinations for a particular degree, credit accumulation, learner autonomy, etc. The larger the number of above features incorporated in a particular system of education, the higher the degree of its openness. It should be clear that Correspondence Institutions or even Distance Education Institutions may or may not be Open Institutions, or may be so only to a limited degree. And at the same time, even a traditional college/university may become 'open' to a recognizable degree. It should be clearly understood that there can be various degrees of the 'openness' of education. However, at the moment it is difficult to say as to which level of 'openness' may legitimize the nomenclature 'open university' for a university. But the relationship between distance education and open education is increasing progressively. Open education can be effected easily through distance education systems on the one hand, and on the other advances in the practice of distance education help and encourage education to become more and more open. The distance mode allows the educational systems to be 'open' and the openness of the educational systems suits the promotion of distance education. That is why the two go together so well.

ii) **Familiarity with the target group:** The writer's first job is to be clear about his target group (learners) — their socio-academic background, their needs, linguistic abilities, aspirations, their potential for learning, study habits, prerequisite knowledge, etc. It is true that we may not come to know each and everything about a learner, yet certain general facts help us

reach our learners more effectively. Mostly they are adults in different age groups — 20 years onwards. They come from different parts of the country — metropolitan cities, towns, rural and remote areas. They belong to varied social and economic backgrounds. They have varying experiences of life, and different ambitions and expectations. Obviously, the learners with all these differences will study the same course materials. For this reason, it is very difficult to decide the level of the content or even the style of presentation. To overcome this difficulty, the course planners should depend on what information they may have about the needs of the target group. These needs will provide a base for deciding the content and also the presentation.

iii) **Familiarity with syllabus:** The writers should be familiar with the syllabus of the course. The length and scope of the content is essentially based on the syllabus. Any deviation from the syllabus may create problems for both the university and the learners. It is therefore, necessary that the syllabus is thoroughly analysed by the writer before he starts writing a unit. Hence proper understanding of course related factors will help you chalk out your writing business. For this, you may refer to the aims and objectives of the course under consideration as defined by the expert committee. Even within the syllabus, the level of the course should be clearly understood by the course writers.

Credit System

The term credit is not a complete stranger in the educational world of India. However, at IGNOU the expression CREDIT has a special connotation and, therefore, deserves a detailed treatment here.

We shall begin with the help of an example:

At IGNOU B.A. (Arts Programme) or B. Com. programme consists of 96 CREDITS in all. A learner can complete at the most 32 CREDITS per year. In other words the shortest time in which B.A. or B. Com. programme can be completed by our distance learners is 3 years, and the maximum number of credits that can be completed in one academic year is 32 CREDITS. What may be the least number of CREDITS to be completed in one year, what is the maximum number of years in which a total of 96 CREDITS can be completed, etc., are questions that don't concern us here. What concern here is the notion of CREDITS. So we focus our attention on just that notion.

We have said above that the maximum number of CREDITS one can complete in one academic year is 32. One way of looking at it is that an academic year may be assumed to consist of 32 working weeks. In actual practice at conventional universities the number of actual working weeks is less than 32, around 26-27 weeks. However, a distance learner who remains unaffected by the regular university regulations may not find it difficult to put in 32 weeks of actual work. Thus, we may say that a CREDIT comprises academic activities of various types that can be completed in one working week.

A different way of looking at a CREDIT is to look for inputs in terms of learners hours. To explain the notion of learners hours we need to refer back to the conventional system of education. In the conventional university system a student makes two types of inputs in terms of time/hour:

- Contact Time (the actual time spent by a student in contact with his teachers, demonstrators, class-mates, etc.).
- Private Time (the time needed by a student to prepare a particular portion of a syllabus).

While as the contact time for each and every student is the same as it is provided by the timetable of the university/college, the private time is a variable and depends on individual learners — one learner may give more time to prepare a particular portion of a syllabus, while as a different student may need less to prepare the same portion. In distance education also we talk of two types of student inputs in terms of time/hours.

- a) Study Time (the time a student may spend in studying the printed course units, work through intext questions, prepare responses for assignments, use audio/video materials at study centres or elsewhere, attend academic counselling sessions, work on experiments, etc.
- b) Private Time (the same as indicated above).

At IGNOU we try to ensure that the **study time** demanded from a distance learner for a particular course should not fall below the **contact time** provided by a conventional university for the same or similar course. We leave out **private time** from our discussion as no control can be exercised on the **private time** needed by an individual learner.

The substance of what we have said is that at IGNOU we would like to demand at least as many **study hours** from a distance learner as a conventional learner is meant to put in as **contact time** for a comparable course at a conventional university.

To materialise this idea we assess and calculate the **contact time** prescribed by a few universities for a particular course and reach at the average **contact time** for such a course. Secondly, we may also look for the **contact time** or **study time**, whichever is available, for a similar course given by a few foreign universities.

On the basis of these data we decide on the number of **study hours** which we would like our learners to put in for a particular course. For example, for our undergraduate courses we expect a learner to put in 960 **study hours** per academic year.

Going back to the notion of CREDIT, we may say that these 960 study hours constitute 32 CREDITS, or one CREDIT at IGNOU is equal to an input of 30 **study hours**. We also said that one credit is equivalent to a week's **study time**, which then amounts to 5 **study hours** per day in a 6-day week or 6 **study hours** in a 5-day week. So far we have talked about the notion of CREDIT in terms of student inputs seen as **study time**.

Now we shall try to look at the notion of CREDIT on the basis of course-materials. As we have explained elsewhere, a course in our system consists of a few blocks each of which is something like 60-80 printed pages. A block usually presents a particular theme within a course. Each block has a few video and audio programmes to go with it. Besides, each block may have some intext questions and an assignment to go with it. It has been seen that generally one block of standard length (including the other materials and academic tasks that go with it) demand a **study time** of about 30 hours. There might be some variations here and there but generally work on one block amounts to completion of 1 CREDIT. For example, the break-up could be as follows:

- a) 20 hours for studying the 4 units in a particular block @ 5 hours per unit including work on intext questions.
- b) 3 hours of work on 1 video and 2 audio programmes accompanying the block.
- c) 4 hours work on the assignment pertaining to this block.
- d) 3 hours work pertaining to this particular block, with the academic counsellors at study centres.

Thus, if a distance learner works through a block of the type we have mentioned above and also performs all the tasks that form a part of this block, he will have to put in 30 study hours, which in other words means that he will have completed 1 CREDIT of the course concerned.

The concept of CREDIT as elaborated above, should help a course writer to visualise as to how and how much of a particular content may be presented in a particular Unit or Block.

For example, if a Block has 4 units, the unit should demand around 5-6 study hours. But, if it has 6 units, then each unit should demand at an average, about $3\frac{1}{2}$ -4 study hours.

A clear understanding of the notion of CREDIT should help the course planners and course writers in taking decisions regarding:

- length and design of a unit in a Block
- nature of and tasks set in an assignment
- number and length of audio and video programmes in a course
- nature and amount of academic counselling needed for a course.

iv) Familiarity with the concept of self-instructional materials: Distance education institutions design course materials on the bases of the principles of self-instructional materials (SIMs). As a course writer, you have to see whether you are following the principles of presentation and structuring the course materials. It is therefore suggested that some specimen text materials may be obtained from IGNOU as samples. Here, in this handbook we shall give you an insight into the principles on which SIMs are prepared.

Here, we should also make it clear that you can use extracts or quotations from other books/articles. And when you find good materials (content, definitions, charts, diagrams, etc.), you should include them in your unit. But you should keep in mind that in such cases one has to seek written permission of the copyright holder. This may be done by the unit writer himself or the case may be referred to IGNOU for necessary action in good time.

v) Familiarity with theories of learning: In the system of distance education, learning takes place through the techniques of distance teaching. Though the learner is the best judge to decide which of the learning strategies will suit him, the course writer should adopt the most effective learning sequence in the unit. The theories of learning can guide the course writer to design the text material that suits the individual learner. You, as a course writer, should ensure whether your text provides suitable learning conditions — for example, practice, reinforcement, feedback, etc., to encourage learning to take place. The text materials should be able to inculcate effective learning among learners.

vi) Familiarity with IGNOU policy: Writing a unit for IGNOU is a paid job. You will be paid a fixed amount for writing a unit in case you are requested to write one. It is worth mentioning here that:

- you will be paid for writing a **self-instructional unit**, not a lecture or an article. You are therefore expected to follow the principles of writing self-instructional materials.
- the copyright of the unit written by you will rest with the university. Due credit, however, will be given to you for having contributed to course materials.
- depending on the quality of the material, the Editor is empowered to change the content, presentation and structure of the unit. If the Editor does not find the unit suitable, for

whatever reasons, he has the authority of replacing it. However, you will be paid the remuneration for writing the unit.

4 DEVELOPING A UNIT

Printed course material constitutes the mainstay of teaching through the distance education system. Even in advanced countries of the world where Open Universities are highly developed, and mass communication media have brought about revolutionary changes in educational systems, the printed course material is still the most important means of imparting instruction to thousands of learners at a distance. Special care, therefore, needs to be taken to ensure academic standard while preparing the course material.

Course writing obviously, is of vital importance for all the academic programmes of distance education institutions. The course material should be self-instructional so that the learner may be able to learn without the support of the teacher. In other words, we have to build the teacher into the course materials. The course has to be altogether self-contained.

The course writers should know about the different strategies through which the subject matter can be presented. There are certain points which are to be taken into consideration while presenting a self-instructional unit. The self-instructional materials must combine most of the functions of a classroom teacher. In addition to covering the subject matter, they must provide orientation to the study, reinforcement and feedback to encourage and direct learning.

There are many ways of presentation, but the features discussed here are common to all and we follow these in our courses at IGNOU. Broadly, there are three parts of a unit — beginning of the unit, the main body of the unit, and the ending. We shall describe each part in detail.

4.1 Beginning the Unit

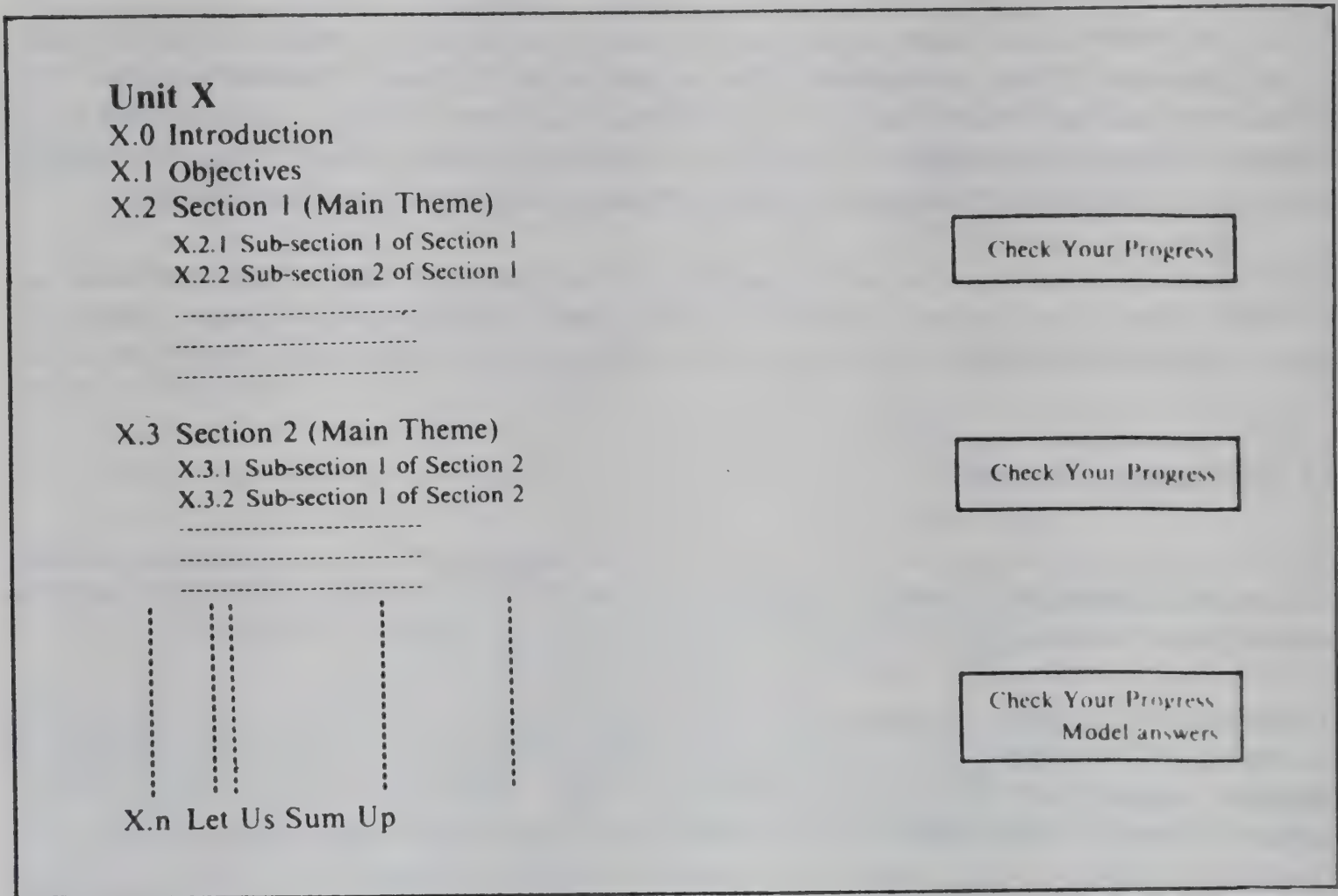
This is the first part of the unit. The function of the “beginning” is to give **decisive orientation** to the learners. The learners need guidance on how to approach the unit and what to expect from it. Accordingly, the earlier sections include the following components:

i) **Structure of the Unit:** To make the study materials more accessible and self instructional, we should present a list of the teaching items at the beginning of the unit. Such a list helps the distance learner see what constitute the unit. While a textbook normally has only one ‘contents’ for the whole book, distance teaching texts have a list of such items for every unit. This list of learning items is called the ‘structure’. Thus the ‘structure’ of a unit is a detailed itemisation of the content broken into sections and subsections. It displays structural relations within the content. It helps learners overview the text and locate relevant parts efficiently. The term ‘contents’ can be used in place of structure. But we prefer the term ‘structure’ as pedagogically it is more meaningful than ‘contents’.

Why should we give the ‘structure’ of a unit? The structure makes the study material more accessible to the learners. They can easily have access to the desired content of the unit. They need not look through the pages to find out the desired learning point. ‘Structure’ presents a clear outline of how the content has been conceptualized by the course writer — what does he think are the main themes, the subthemes and sub-subthemes and what their logical linkages. It presents a picture of how the writer visualizes the content. Thus, the structure with the help of clearly differentiated and logically arranged sections and subsections, makes the text more learner oriented.

The sections and subsections of a unit should be numbered and this numbering can be done in various ways. The objective should be to ensure that the numbering is simple and clear, and it should make the content more accessible. For this purpose we have adopted the use of points. Under this system, the “sections” are simply numbered in the sequence using one point, e.g. 3.1, 3.2, 3.3, 3.4 . . . and so on. In this example the left hand digit (i.e., 3) denotes the unit number, and the digit on the right hand side of the point denotes the section number, i.e., the first section of unit 3, the second section of unit 3 and so on. Similarly a section may be divided into ‘subsections’ using two points, e.g., under section 2 the subsections may be expressed — 3.2.1, 3.2.2, 3.2.3, 3.2.4, . . . and so on. Thus, each number conveys a meaning in terms of a unit or the section or the subsection. For example, in case of 3.2.1., 3 stands for the unit, 2 stands for the section and 1 for the subsection. So 3.2.1 indicates the first subsection of the second section of unit number 3.

It should be kept in mind that we do not use numbering beyond two points. If you feel that the parts of a subsection are important and must be included in the structure, that may be placed within the subsection without allotting any number to them. Instead they can be highlighted with the help of bold typeface. To understand the structure of a unit, see the following example:



Example 1: A schematic representation of the design of Units.

The titles of the sections and subsections should be clear, definite and relevant to the content being discussed. Some more examples are as follows:

UNIT 13 FINANCIAL INSTITUTIONS

Structure

- 13.1 Introduction
- 13.2 Rationale of Development Banking
- 13.3 Evolution of Development Banking in India
- 13.4 Industrial Finance Corporation of India
- 13.5 Industrial Credit and Investment Corporation of India
- 13.6 Industrial Development Bank of India
- 13.7 Export-Import Bank of India
- 13.8 National Bank for Agriculture and Rural Development
- 13.9 Industrial Reconstruction Bank of India
- 13.10 Conclusion
- 13.11 Objectives
- 13.12 Self-assessment Test
- 13.13 Further Readings

Example 2: Unit Structure

UNIT 1 COURSE DESIGN

Contents

- 1.0 Objectives
- 1.1 Introduction
- 1.2 Developing a Curriculum
 - 1.2.1 Teaching the hidden curriculum
 - 1.2.2 The nature of the students
 - 1.2.3 National considerations
 - 1.2.4 Content and methods
- 1.3 Assessing Educational Needs
 - 1.3.1 The characteristics of adult learners
 - 1.3.2 Assessment of specific needs
- 1.4 The Process of Curriculum Planning
- 1.5 The Systems Approach to Course Planning
 - 1.5.1 Educational needs
 - 1.5.2 Defining objectives
 - 1.5.3 Resources and constraints
 - 1.5.4 Selection criteria
 - 1.5.5 Alternative methods of meeting objectives
 - 1.5.6 Alternative subject matter
 - 1.5.7 Choice of method
 - 1.5.8 Development, feedback and evaluation
- 1.6 Making a Course Outline
- 1.7 Problems in Course Planning
- 1.8 Let Us Sum Up

Example 3: Unit Structure

ii) **Introduction to the Unit:** The introduction part explains the content being discussed in the particular unit, and relates the unit with previous units and also with the existing knowledge of the learners. The introduction should be brief to provide adequate help to the learners in starting their study.

In the introduction you need to receive, welcome and motivate the learners by giving them the impression that what they are going to study in the unit is easy and manageable. The course writer therefore should make a gentle start using the material and/or information which is already known and familiar to the learners.

Components of an introduction: There are three major components of an introduction:

- a) **‘Structural’ component:** In an introduction, we give information about the previous content, i.e., what has gone before. Thus, we establish a link between what a learner has already learned and what he is going to study in the unit at hand.
- b) **‘Thematic’ component:** This is an overview describing the main concepts to be discussed in a particular unit. Its function is to attract the learner’s interest and focus his attention on the content given in the unit. Besides, it should build a basis for and promise friendly and purposeful communication with learners. It is done best by talking informally about the items in the structure, i.e., theme of the unit — what content we have planned to include in this unit, etc.
- c) **‘Guidance’ component:** We should provide study guidance to the learners as to what they are supposed to do before they start reading the unit, i.e., what knowledge they need to acquire to achieve the objectives of this unit. The study requirements such as time, special activities, back/cross references, equipment, books, etc., should be incorporated in the introduction. The suggestion is that we should inform the learner about all that he needs to get the best out of the unit.

A study guide may consist of notes or hints of the following type:

- before you start working on this unit, please go through once again subsection 3.1.3 of unit 3, Course 2.
- you must conduct experiment no. 5 before you proceed to this unit.

To motivate the students for active involvement in learning we can give some activities or something practical to do right at the beginning of the unit if we need to.

Because the introductory part covers the entire unit and establishes links with previous units, it may actually be written after the unit is completed.

The introduction should not be more than a page or so. Reproduced below is an example from one of our units.

INTRODUCTION
<p>No business enterprise can entirely depend on its own finances. It needs finances from other external sources which provide not only short-term loans but also medium and long-term credit facilities. The present unit provides a sketch of all India financial institutions, their role and functions and their achievements towards fulfilling the various national objectives.</p> <p>The content in this unit is basically descriptive. You will have here reference to institutions like IFCI, ICICI, IDBI, IRBI, EXIM Bank and NABARD. While going through the preceding unit, you must have already collected some information material on some of these institutions. You will have ample use of those materials in this unit. However, you must remember that your job in this unit is not only to describe but also to analyse the role and responsibility of these financial institutions.</p>

Example 4: Introduction

iii) **Defining objectives:** The statement of objectives is always an important part of distance education texts. By objectives we mean — what should a learner be able to do (or do better), after going through the unit, that he was unable to do or could not do so well before (Rown-tree, 1986). Here we need to note that 'objectives' are different from the 'aims'. The aims are expressed by a teacher as to what he would try to do or get across through his teaching activities. On the other hand, the objectives are the behaviours to be displayed by a learner. In other words, the 'aims' are for a teacher and the 'objectives' are for the learners to achieve. Of course, the objectives are derived from the aims. We shall discuss objectives in detail in what follows.

Defining objectives is to identify the terminal outcomes of instruction in terms of observable performance of learners. These outcomes are to be presented in 'behavioural terms'. Some educationists call them 'learning outcomes'.

The objectives of each unit need to be defined clearly. A clear statement of objectives means that any teaching activity can be empirically planned, evaluated and revised until the desired results are achieved. If we, the distance educators, fail to reach the objectives, or if we feel that the objectives are not attainable, then we have to rethink and modify objectives themselves, or change the instructional strategy until these are achieved.

Advantages of expressing objectives in behavioural terms: Broadly there can be three main reasons for listing carefully worded statements of objectives in behavioural terms.

The objectives:

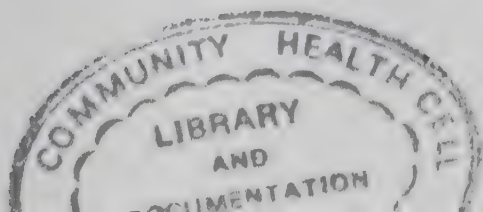
- a) provide guidance in planning the instruction and the unit. The course writers should determine in the beginning itself what a learner will be able to do after going through the course/unit or a part of it.
- b) help in deciding assessment techniques — construction of a test and evaluation schemes. Ambiguous objectives make it difficult, sometimes impossible to prepare effective test items.
- c) enable the learners to know what they must learn or achieve in a particular unit so that they may plan their study schedule accordingly.

Components of a complete statement of objectives (in behavioural terms)

a) **Condition**, i.e. situation: A behaviour can be displayed under a certain condition. We need to state the condition under which the learner should display the desired behaviour. For example — **after viewing the video programme**, the learner will be able to . . .; **after attending the workshop**, the learners will be able to explain the concept of distance education; **after 5 months of practice**, you will be able to type 30 words per minute. Here after viewing the video programme, after attending the workshop, after 5 months of practice, are conditions necessary to reach the expected level of objectives. A statement of objectives, therefore, will always start with a condition/situation.

b) **Behaviour**, i.e., action: An objective in behavioural terms indicates what behaviour a learner should display after going through the unit. For example — the learner will be able to distinguish between living and non-living things. Here the learner will display his behaviour by listing out the differences between living and non-living things.

c) **Standard**, i.e., level: While stating objectives, we need to set 'norms' for the behaviours to be displayed. The learners should know 'to what level they should be able to perform'. Take for example the statement — 'after going through this unit, you will be able to explain four



properties of magnets'. Here the word 'four' sets the standard for the learners' performance. The learners are expected to achieve this level of the objectives. The standard of objectives depends on the level of the learners you are writing for and also what we want them to achieve.

This unfortunately gets overlooked quite often, so in addition to emphasizing the first two components, the last one should be equally emphasized.

Incorporating the three elements in your objectives, would give learners explicit guidance on what they must achieve.

An example is given below:

OBJECTIVES
<p>In this Unit, we introduce you to the principles of planning and designing a course for distance education. We will do this first by making comparisons between conventional and distance education, and then by discussing some of the techniques that distance educators have adopted to help with research and planning.</p> <p>By the end of this Unit, you should be able to:</p> <ul style="list-style-type: none">• explain how and why the curriculum for distance education may differ from that used in conventional education;• describe methods of assessing educational needs and explain the importance of carrying out such an assessment;• describe and discuss the process of curriculum planning for distance education;• describe the systems approach to course planning and explain each stage;• use this approach to develop a course outline; and• describe and discuss problems commonly encountered in the process of course planning.

Example 5: Objective

Terminology to be used: While defining objectives in behavioural terms, we should be careful in choosing appropriate verbs. The behavioural verbs are observable and measurable. Following are some examples of such words/verbs used in stating objectives in behavioural terms:

- Descriptive verbs:** define, describe, explain, write, name, list, select, state, etc.
- Discriminative verbs:** compare, differentiate, identify, distinguish, give examples, summarise, breakdown, illustrate, outline, separate, select, etc.
- Motor performance verbs:** drive, type, draw, measure, write (learning how to write), etc.

Expressions like "know", "understand", "learn", "become aware of", etc., may indicate what the **instructional objectives** are, i.e., what the institution or the course writer wants to happen after a particular unit has been studied. But whether it happened or not won't be clear to the learner nor to us as we cannot measure or see through one's **knowing, understanding, being aware of** unless it is displayed by a corresponding behaviour. It is, therefore, necessary that we make the statements of objectives in behavioural terms as exemplified by the three sets of words given above.

You can use the table given below for transforming objectives from instructional terms into behavioural terms.

Objectives in Instructional Terms	Objectives in Behavioural Terms
Knows	Defines, describes, identifies, labels, outlines, reproduces, selects, states, lists.
Understands	Converts, defends, distinguishes, estimates, explains, extends, generalizes, gives examples, infers, paraphrases, predicts, rewrites, summarizes.
Learns	Changes, computes, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses.
Analyses	Breaks down, diagrams, differentiates, distinguishes, identifies, illustrates, infers, outlines, points out, relates, selects, separates, subdivides, categorizes.
Synthesises	Combines, compiles, composes, explains, generates, modifies, organizes, rearranges, revises, rewrites, summarizes, writes.
Judges	Appraises, compares, concludes, contrasts, criticises, describes, discriminates, explains, justifies, interprets, relates, summarizes.

4.2 Main body of the Unit

The main body of a unit includes the content in the form of sections and subsections, each of which presents at least one new point, and self-check questions related to those points.

Usually each section relates to a different objective of the unit. The section presents the subject matter, the theme or the topic and some questions to check that the learners have understood the material. The questions are normally self-assessment questions. The body of the unit, therefore, normally consists of a sequence of texts explaining a topic and self-assessment questions, exercises and/or activities.

Most units require several hours of study and so learners cannot work right through them in one study session. A division into suitable sections, therefore, provides learners with stopping places. Clear organisation is an imperative obviously.

Within sections, headings or other signs mark changes from texts to exercises. Not every learner will want to read every word of the text and, not every learner will work through it once only. The material will be exploited by learners in various different ways, and clear and consistent structure helps them to do this.

The following explains where the main body of a unit begins:

UNIT 4 ORGANISING THE PRESENTATION

Contents

- 4.0 Objectives
- 4.1 Introduction
- 4.2 Presentation and Motivation
- 4.3 Legibility
 - 4.3.1 The type
 - 4.3.2 Arranging the type
 - 4.3.3 Paper size
 - 4.3.4 Paper colour and quality
- 4.4 Legible Graphics
 - 4.4.1 Illustrations
 - 4.4.2 Diagrams and charts
- 4.5 Attractiveness
- 4.6 Accessibility
 - 4.6.1 Structural devices
 - 4.6.2 Access symbols
 - 4.6.3 The importance of access structures
- 4.7 Let Us Sum Up

4.0 INTRODUCTION

Learning from reading a text is not easy. The reader must put considerable effort into the task. But that is not all; the quality of the text itself is also important. Some texts are more effective teachers than others. There are three categories of factors which contribute to effectiveness: the presentation of the content, the level and clarity of language, and the format to the text. In other words, the meaning must be clear, the language simple and the text itself well presented. It is difficult to estimate how much importance to attribute to each of these factors, but it appears that the third factor, the subject of this Unit, is as important as the other two. In this Unit we shall consider why this is so.

4.1 OBJECTIVES

This Unit will help you to understand the importance of presentation and design in distance learning texts.

At the end of the Unit, you should be able to:

- discuss the relationship between presentation and motivation in distance education;
- describe factors which contribute to the legibility of texts;
- describe features which contribute to the attractiveness of text; and
- describe features which make texts usable and accessible, and explain why they are important for developing study skills.

4.2 PRESENTATION AND MOTIVATION

To what extent does the appearance of a text matter? It may give us pleasure to possess an attractive book, but is it of any educational importance whether or not a book is good to look at? We can answer this question both in the affirmative and negative.

If a student is very highly motivated, he will learn even from poorly produced materials. There have been cases where distance students have accepted hand written duplicated notes. Many correspondence courses consist of badly-typed, densely-packed pages, with thin rough paper and a proportion of students will always study successfully even with such materials.

Example 6: Body of a Unit

There can be many ways of presenting the content. The main thrust should be on the way the learners can grasp the content easily. We shall discuss here the format being followed at IGNOU.

The content of a unit as a whole should be conceptualised and worked out before we start writing. Working out the detailed structure is termed as ‘concept-mapping’. For this exercise, we need to know the philosophy behind the structure of the course properly and thereafter, the suitable sequence to suit the nature of subject matter and the process of learning is worked out. This can be done easily if a unit writer has thorough command over the subject-matter intended to be presented in the unit.

We shall explain this point with the help of an example.

Let us suppose that we have to prepare a unit on the theme “Universe and Earth”. No two teachers/writers may present this theme the same way. In other words, the theme may be presented on the bases of differing ‘concept maps’. Given below are three different “concept maps” covering the theme under consideration.

Concept map 1	Concept map 2	Concept map
<ol style="list-style-type: none"> 1. Light year: Unit of distance — stars and galaxies 2. Universe — Colonies of stars — Galaxies 3. Constellation-group of bright stars 4. Solar system — part of Milky Way 5. Big-bang Hypothesis 6. Solar syste — Sun + 9 planets (earth) 7. Earth — Atmosphere, Hydrosphere, Lithosphere 8. Rock cycle — three major groups of Rocks 9. Earth — Crust, Mantle, Core <p>(1)</p>	<ol style="list-style-type: none"> 1. Universe & its origin <ol style="list-style-type: none"> 1.1 Galaxies and constellations 1.2 Light year 1.3 Milky way 2. Solar Systems 3. Earth <ol style="list-style-type: none"> 3.1 Atmosphere 3.2 Hydrosphere 3.3 Lithosphere (Rocks) 3.4 Structure of Earth <p>(2)</p>	<ol style="list-style-type: none"> 1. Earth: surface as we know it <ol style="list-style-type: none"> 1.1 Land 1.2 Inside the earth Lithosphere — Crust-mantle-Core 1.3 Outside the earth Hydrosphere-Atmosphere, Biosphere 2. The system Earth belongs to <ol style="list-style-type: none"> 2.1 Planets, comets 2.2 the Sun-Solar System 3. The system, the Solar system belongs to <ol style="list-style-type: none"> 3.1 Milky way 3.2 Galaxy - types, etc. 4. The system galaxies belong to <ol style="list-style-type: none"> 4.1 Universe 4.2 Size of Universe (Light Year) 5. How was the Universe created <ol style="list-style-type: none"> 5.1 Theory 1 5.2 Theory 2 <p>(3)</p>

Example 7: Notion of creativity in the context of unit design: Concept Maps.

In ‘concept map 1’, the theme has been presented as 9 sub-themes, in ‘concept map 2’ it has been presented as 3 sub-themes, and in ‘concept map 3’ as 5 sub-themes. If we consider the three ‘concept maps’ on their pedagogic merits, ‘concept map 2’ appears to be better than ‘concept map 1’, in so far as the arrangement of sub-themes is more logical. However, it is the ‘concept map 3’ which is the best of all. In ‘concept map 3’ the writer has started with the **known** and moved in logical steps to reach and cover the **unknown**. It is at this stage that unit writers can bring in their creativity and resourcefulness to shape the materials.

Though all the three ‘concepts maps’ present the same subject matter, it is the third one which will be most effective for distance learners.

To write a unit, the unit writer must prepare a few concept maps pertaining to the theme concerned, and then decide on the best of them all. Experienced teachers should not take long to do so. Each theme consists of a few sub-themes, and each sub-theme will have the status of

a section in the unit — a section within a unit will always be indicated by two digits with a point in between e.g. 3.2, 3.3, etc.

Having thus decided on the outline of the Unit, the course writer needs to be aware of the following seven considerations:

- | | |
|---------------------------|-------------------|
| i) Small steps | v) Language |
| ii) Logical arrangement | vi) Illustrations |
| iii) Ordering the content | vii) Assessment |
| iv) Personalized style | |

We shall touch upon these considerations briefly in that very order.

i) Small steps: The content should be divided into small manageable learning activities/steps, and each learning activity should be put under a section or subsection. The learner will move on point-by-point. Moreover, if we want to move from teacher-centred education to learner-centred education, the content should be divided into reasonably small points so as to make it easier for the learner to move from one step to the other.

ii) Logical arrangement: The content should be logically arranged so that the learners can proceed from one learning point to another just as if they are climbing stairs. These learning points should be stated clearly in the unit (make easily accessible) and each point should be linked with another that follows it. This logical arrangement will maintain both the continuity and consistency of what is presented. It should be taken for granted that if the course writer himself is not clear about what he wants to present, his presentation will not promote self-learning on the part of the learner.

In order to maintain this logical arrangement the writers should conform to structure strictly.

iii) Ordering the content: On the bases of researches in educational psychology we follow some principles in ordering the content for optimum learning. The main principles are:-

- a) **From known to unknown:** Each unit should be linked with the entry behaviour or the pre-knowledge of learners. The new knowledge will be meaningful if it is related with their previous experience or to familiar, everyday surroundings.
- b) **From simple to complex:** To create interest and cultivate motivation in learners the unit should be started with relatively easy texts/concepts and the complex concepts should be introduced gradually. The simplicity and complexity of concepts should be judged from learners' point of view. The course writer has to establish a level that would be easily comprehensible to the learners. The writer should remember that he is not writing an article in a reputed journal or a book but a text that is meant for learners who supposedly have relatively less knowledge (of the subject) and may have lesser experiences as well.
- c) **From concrete to abstract:** As far as possible we should start with concrete materials and gradually introduce the abstractions. In order to initiate understanding, we should use illustrations, experiments, demonstrations, etc.
- d) **From particular to general:** A particular concept should be generalised after a few particular cases have been discussed. The particular examples and illustrations precede to generalisation where particular is concrete and general is abstract. (In certain case we may reverse the process . . .)
- e) **From actual to representative:** The learners learn quickly from the actual objects/

events. If possible, the learners should be advised to do some activities or experiments related to the unit. They should be confronted with actual problems and they should try to solve them. If exposure to real events/objects is not possible, the help of representative forms such as charts, graphs, diagrams, etc., can be taken to make the content more self-learning.

iv) Personalized style: The learner in distance education systems is the active partner in the teaching-learning process. He reads attentively, tries to comprehend and assimilate the content of the unit. Therefore, we need to be sympathetic and generous in explaining the content. In writing self-instructional materials, we generally address learners by the word 'you'. This gives to the learner a feeling of being paid individual attention. Similarly we may use the word 'we' when we refer to ourselves — individual or individuals. Writing materials is to build a conversation between a teacher and the learner. In other words, the text material should give a feeling to the learner that he is being taught by a teacher who is not present physically. Thus the best way of getting the material across to the learner is to make the writing more personal and interactive. Such a style of writing will also influence the attention and interest of the learners.

Moreover we should be careful while writing for distance learners who are not well known to us. Our expression should be friendly and in conversational style, with respect both for them and for the subject being discussed.

v) Language: Distance education depends largely on the preproduced printed materials which are supported by other mass media. In preproduced materials, the quality of language is a deciding factor for its effectiveness.

Course writers do know that simple and clear language makes communication effective. Even then, a few writers cannot resist the temptation to use difficult words and write in a complicated style which learners find difficult to appreciate and thus fail to understand what the writer is trying to say.

A self-instructional text should persuade the learner to read it, participate in and interact with it before it makes learners think critically about it. To help accelerate this process it is absolutely necessary to write in a language which communicates to learners most directly. In learning at a distance, to make communication effective and direct is imperative.

But how to produce such a text that can communicate to the learners directly? How to write in a simple language? What do we mean by 'simple language'? How simple should it be? These are some questions which inevitably arise when we talk of simple language and readability. To answer all such questions, we have to consider a few preliminary questions first: Who is the learner? What is the subject dealt with? Who is writing the text?

When you write self-instructional materials, you should be more cautious in judging the difficulty level of the language. The terms 'simple' and 'difficult' are relative. We may be wrong in judging the difficulty level of the language. In an observation, for example, a child, while learning English as a foreign language, learnt the word 'E for Elephant' earlier than 'K for Key'. In our assumption the word 'Elephant' is difficult and 'Key' is simple. It is therefore the creativity of a course writer to decide based on his experiences the level of language for the target group. Also an individual's educational background, intellectual growth and maturity of thought mainly determine the difficulty of the language.

While writing SIMs, you should keep in mind quite a few points pertaining to language — sentence structure, vocabulary, and style. Thus you should write in a simple, plain and clear language. By simple, plain and clear language, we mean straight forward, and unambiguous

language. The language used should give the learners the message without making them rake their brain over the meaning of words and phrases. If your unit makes learners consult the dictionary quite often, you are using too many unfamiliar words — difficult words.

Sentences: Construct your sentences in such a way as to communicate directly. As far possible, make your sentences short and simple. If your sentence is too lengthy — break it into two or more small and simple sentences. Look at this sentence:

“When the entire country was devastated by furious floods and murderous famine, when the people of the land, finding no alternative to keep their bodies and souls together started slaughtering the emaciated cattle and hunting for grass, nuts and roots, when the foreign enemy was amassing his soldiers and arms with a view to inflicting a defeat such as one that would never allow either the ruled or the ruler to recover from the bleeding, mortal wound and the internal foes were at each other’s throats to grab the spoils from whatever was left undestroyed by the fury of the natural elements, the frolicking, slothful, irresponsible, cowardly old monarch was employing all the faculties of his lazy brain in inventing ways of keeping himself blissful in the company of young dancing girls of ravishing beauty and the brimming cups of wine kept in vintage for decades and centuries, and the deceitful, selfish, lecherous, treacherous, cruel and gambling friends.”

The sentence may appear to be mesmerising. But you may not get the message clearly and directly. You would like to do a stylistic analysis of it to see weaknesses of the sentence.

Now let us try to re-write it in smaller sentences with fewer adjectives. We may also change the words at places.

“The whole country was ruined by floods and famine. People were killing the cattle and collecting grass, nuts and roots to survive on. The foreign enemy was preparing to attack the country and bring it under his rule. The internal enemies were trying to plunder the wealth of the country. The old king was keeping company with wine, women and gamblers!”

You may judge for yourself this passage gives the message more directly than the earlier sentences.

Vocabulary: Some people have a wrong notion that if you use difficult words you are more scholarly. The foggy of words can hide the meaning and make communication ineffective. The active vocabulary and simple grammar make your unit readable and the presentation lucid.

Paragraphs: Even if your sentences, grammar and vocabulary are simple and very intelligible, lengthy passages may spoil the effect. One idea can be presented in one paragraph. Paragraphing helps you think more logically and present your ideas clearly.

Conversational and friendly language: In distance learning, conversational and friendly language has an educational purpose. When you are writing a unit, you are actually communicating with your learners. You ‘speak to them through your writing. And try to write as you speak.

Use of personal pronouns: As we have said above, writing for distance learners is talking to them. So let your personal voice emerge in your writing. In our dialogue or conversation, we use ‘you’ and ‘we’. The writing therefore should be personal, warm and brief. We write: “the writer desires that the learner recalls what transpired between them.” Do you find any personal touch in such a style? We can say the same thing like this: “Could you recall our

discussion . . .” Conversational and friendly style does narrow the distance between you and your distance learners. But friendly does not mean absence of seriousness.

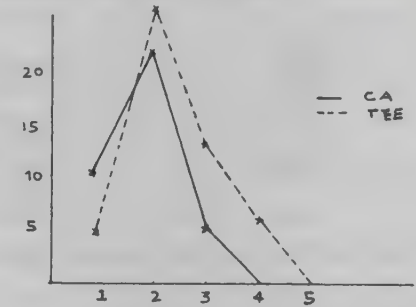
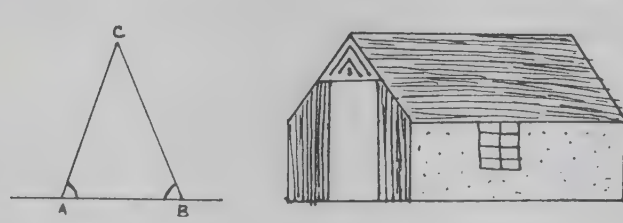
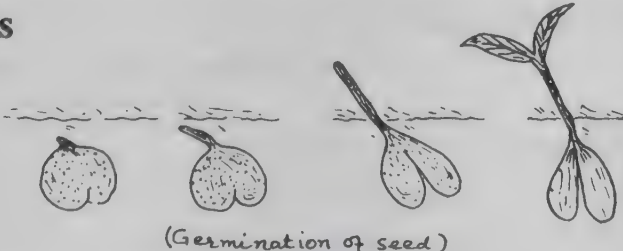
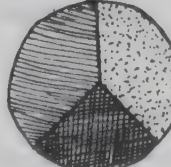
Humour: Your writing can be humorous at times, if it really illuminates the content of the unit. But you should not deviate from the main objective, i.e., teaching.

vi) Illustrations: Illustrations create interest, stimulate imagination, increase comprehension, and help retain information/knowledge on long term bases. Illustrations are used to elucidate certain facts, concepts and abstractions.

Illustrations are the means to reach the end, not the end in themselves. They should not dominate the content of the unit. As such, excessive use of illustrations should be avoided as these may distract the learners’ attention. We should therefore make a judicious selection of illustrations depending on the need and the cost involved. They should be simple and self-explanatory, and should be directly linked with the content of the unit. The illustrations should be familiar and recognisable. The learners should be able to identify what is in a picture. In other words, illustrations should have educational value. To be effective they should be presented in varied formats, not in a dull and monotonous fashion.

There can be various types of illustrations — photographs, line drawings, diagrams, graphs, flow charts, maps, cartoons, etc. Photographs are not generally preferred in self-instructional texts because the reproduction of photographs is very expensive. Line drawings, diagrams, graphs, etc., are used wherever required, as they are not only cheaper, but also easily available.

The illustrations can be useful in bringing pictorial support to your writing. You can draw some of the simple illustrations yourselves. For example:

a) Graphs	
b) Line diagrams	
c) Particular specimens	
d) Pie chart	

Example 8: Illustrations

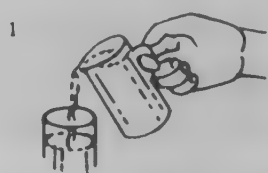
Thus, you can draw yourselves simple illustrations in your unit. You can also adapt materials from other sources. But for such illustrations the copyright permission is sought. In such cases you should write to IGNOU, well in advance, to get copyright permission of the concerned agency. For this you have to give the title of the book/photograph, the name of publisher/photographer, etc. Such illustrations should be given proper credit.

You can get some illustrations prepared in the market. IGNOU will make payments at reasonable rates as are being practised in sister institutions such as NCERT, NIEPA, UGC, etc.

A work manual needs to use presentation factors in such a way that there will be only a minimal risk of users losing their place in the procedural sequence and inadvertently missing a step. Figure 11 illustrates how changing the spatial layout of procedural instructions can make instructions easier to follow. At the top are original instructions; below is a revision proposed by Hartley (1978).

A work manual needs to use presentation factors in such a way that there will be only a minimal risk of users losing their place in the procedural sequence and inadvertently missing a step. Figure 3 illustrates how changing the layout can make instructions easier to follow.

EXPERIMENT TO SHOW THAT AIR CAN SUPPORT A COLUMN OF WATER



Method

- 1 Fill a glass tumbler with water right up to the brim.

3



Air can support things. You can carry out an experiment to show that air can support a column of water. You will need a tumbler, a piece of cardboard and water.

2



- 2 Slide a piece of cardboard over the top of the glass so that it touches the water. Do not allow any bubbles of air to creep in.
- 3 Turn the tumbler upside down holding the card against the glass. Take your hand away from the card. If you do this carefully, the water will remain in the tumbler. It will not fall out because it is supported by the air pressure below.

EXPERIMENT TO SHOW THAT AIR CAN SUPPORT A COLUMN OF WATER

Air can support things. You can carry out an experiment to show that air can support a column of water. You will need a tumbler, a piece of cardboard and water.

Method



- 1 Fill a tumbler with water up to the brim.



- 2 Slide a piece of card over the top of the glass so that it touches the water. Do not allow air bubbles to creep in.

- 3 Turn the tumbler upside down holding the card against the glass. Take your hand away from the card. If you do this carefully, the water will remain in the tumbler. It will not fall out because it is supported by the air pressure below.

Figure 3: Variations in the spatial layout of procedural instructions. At the top are the original instructions; below is a revision proposed by Hartley. (Courtesy : James Hartley, 1978.)

Example 9: Diagrammatic demonstration of an experiment. (Courtesy James Hartley, 1978)

vii) **Assessment:** To write assessment items to see whether or not the objectives defined in the beginning of the unit are being achieved, is one of the important functions of a course writer. You should realize the importance of assessment in distance education. In self-instructional materials we use at least two types of assessment:

- That kind of assessment which helps the learner learn better and also provides them feedback about their grasp over the content of units. Self-check questions, exercises, activities and assignment questions come under this category.
- The second type of assessment is the one which exclusively measure the learners' performance. The term-end examinations come under this category.

In this handbook, we shall discuss the first category of assessment which has direct bearing on the functions of a course writer. As these questions are placed within the printed text of the units, we may call them **in-text questions**. At least three types of questions may be set under this category.

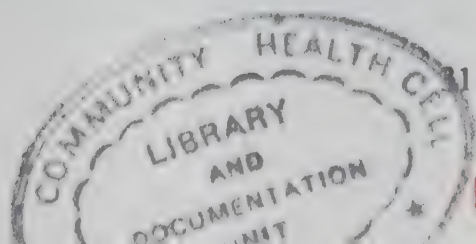
a) **Self-check questions:** Inclusion of self-check questions (some prefer calling them self-assessment questions) is one of the important characteristics of self-instructional materials. Self-check questions, as the term itself implies, are those questions which a learner attempts himself and does not send to the University for assessment. The functions of these questions are to help the learner to revise information/knowledge, to support learning, and to assess, for himself, as to how much content he has grasped, i.e., to provide him feedback. Thus through these questions, we actually help the learners, and take them gradually — step by step, to the level of objectives stated in the beginning of the unit. Depending on the functions we assign to these questions, these may be a comprehension question, a recall question, an inference question or a question which makes the learner to go through the specific portions of the unit once again.

Self-assessment questions should occur frequently in any distance teaching material. They are normally presented as a feature separate from the main text: one reason for this is that the answers to the questions are also given in the unit, and both questions and answers therefore need to be numbered to ensure identification. This leads to a necessity to separate them from the continuous text. It is, however, important to see that text and questions are clearly interwoven — constantly taking the learner forward rather than functioning as a check-post. Certainly, we can describe the unit as a series of steps, but they are small, easily taken steps: perhaps we might think of a moving staircase rather than a ladder.

The questions make the text more interesting and break the monotonous nature of the print material. These built-in questions motivate learners to actively participate in learning. In this way these questions put forth 'checks' or 'barriers' to let the learners know whether or not they have comprehended the content read. Self-check questions are generally very short and objective type questions. The objective type questions can include recall type, recognition type, comprehension and application type questions.

A good teacher will encourage the learners to learn by checking that points are understood, by stimulating them to remember and recall material and by encouraging them to use what they have just learnt. A teacher in a classroom situation, usually does these things by asking questions, setting exercises or devising problems for the students.

Self-check questions should be related to objectives. Remember one function of writing objectives in behavioural terms is that they provide a relatively objective way of evaluating the achievements of learners by looking into and measuring their performance.



The second important point to remember is that these questions are rightly placed. You can try to identify points in the text where a teacher might ask questions or a set of activity. In this connection a simple principle to follow is that such questions be distributed over the unit uniformly, for example, a question in every three pages.

Format: The self-check questions can be presented in various ways. We should take care that the questions are easily accessible to the learners. As the answers to these questions are also to be given in the unit, both the questions and the answers need to be numbered to ensure identification. Adequate guidance regarding the scope of a question, space for writing the answer, etc., should be given to the students.

The following example illustrates some of the points made above:

1 Check Your Progress 2

Consider the formulation of aims and objectives in your subject. Do you foresee any particular requirements or difficulties?

Notes: a) Space is given below for your answer.

b) Compare your answer with the one given at the end of this Unit (p. 37).

Example 10: Check Your Progress

Model answers: All the self-check questions should be provided with model answers. These answers not only provide feedback, they can also be part of the teaching. The model answers serve the purpose of feedback to the learners and consequently enhance their learning and maintain their motivation. The course writers should acquire the habit of constructing answers immediately after they have written the questions.

The answers are placed at the end of the unit. Most of the learners prefer the answers to be more hidden. They complain that they are tempted to have a furtive glance at the answers, if they are easily visible.

We should take note that the model answer may not necessarily be the best answer to the question asked. A learner may differ from what has been given in the model answer, but he should be able to see that he is on the right path. While writing model answers, the course writers should keep in mind that the answers should be based on what we have taught them or discussed in the unit, and not on materials that fall outside the scope of the materials presented to them.

The number of self-check questions depends on the objectives and/or the learning items in a unit. The self-check questions should cover as many learning items as possibly can be incorpo-

rated. On an average 3-4 self-check questions should be given in a unit. And all the self-check questions should be distributed at uniform intervals in the unit.

b) Activities: Like self-check questions, activities also serve important pedagogic purposes. The activities provide the opportunity to the learners for the practical application of knowledge gained through the print material. Thus the term activity would mean something that has practically to be done. The activities are in a sense a pedagogical diversion of the learners' attention. After giving a complex concept, you can direct the text's learning activity to other activities related to the unit. The activities are longer and open ended with a purpose to encourage the learners to relate the text material with practical experience. As such in certain cases activities may not have any model answers. See an example taken from our IGNOU courses:

Activity

Prepare a questionnaire to analyse a clerical job. Refer back to the section while structuring your questions.

Example 11: Activity

Apart from reinforcing learning, the activities make the content more interesting for the learners. They can actively display their creativity through solving the problems. The learners will learn to manage their own learning.

As said above there is no need to give model answers to the activities. But we should state clearly the scope, time and the length of the activity. The activities should not involve a large amount of time, energy and money.

Under activities, the course writer may:

- direct the learners for additional books, folklore, etc.
- advise them to go on a study visit to collect information. •
- suggest to an experiment, etc.

c) Exercises: Exercises perform slightly different functions from that of activities. Exercises facilitate learning through practice (drill) and reinforcement. You will remember that the practice is one of the basic conditions of learning.

After discussing a concept/learning item, you can ask learners to work on an exercise for immediate practice. Through exercises, the learners will be able to check or revise their performance and retain information.

The model answers to the exercises may be given at the end of the unit. If it is not possible to provide model answers, the course writer may present the probable solution or just a few hints pointing to the possible answer.

Under exercises, the distance learners may be asked to:

- draw conclusions from the discussion or information presented.
- express in the form of a diagram what has been detailed in the unit, etc.

The exercises prove very useful for mathematics and related subjects. Examples are given below:

Polynomials consisting of one, two and three terms are known as monomial, binomial and trinomial, respectively.

E E 5) Identify the polynomials from amongst the following and label them as monomial, binomial or trinomial.

i) $x + 3a^2$

ii) $3ab^2c^3d^4e^5 + 10^{30}$; where a, b, c, d, e are all variables.

iii) $(1/2)p + (1/3)q + (1/4)r$; where p, q, r are variables.

iv) $\frac{x + 9^{64}}{y - 9^{64}}$

v) x/y

vi) 1.

Example 12: Exercises

A term of a polynomial may be composed of several factors. For example, $2xy$ has 3 factors 2, x and y. Each factor is known as the **co-efficient** of the rest of the term. Thus, in $2xy$, 2 is the co-efficient of xy and x is the co-efficient of $2y$. The numerical factor is called the **numerical co-efficient**. For example 3 is the numerical co-efficient in $3a$ or $3xy$. The co-efficient of x in the term x is 1 (since $x = 1x$) and that in $-x$ is -1 .

E E 6) Find the co-efficients of x, y and z in each of the following terms:

i) xyz , ii) $3x^2yz$, iii) $-yzx^5$

What are their numerical co-efficients?

Example 13: Exercises

d) Assignments: One of the important means of assessment in distance education is the assignment. The assignment consists of one or more questions which the learner completes and sends to the tutor (academic-counsellor) for comments and grading. The basic purpose of an assignment is to initiate actual dialogue or pedagogical interaction between the distance teacher and the distance learner, and thus reinforce learning. Thus the sense of isolation of both the learner and the tutor (academic-counsellor) is reduced. The assignments provide feedback to both the teachers (institution) and the learners. This is called continuous assessment.

The assignments are longer and their responses are submitted to the tutor (academic-counsellor) for evaluation and grading. A tutor has to write his purposeful comments on the assignment and also award a grade to the response.

The scope of each question within an assignment should be defined clearly, i.e., guidelines regarding the length of the answer, issue/points to be covered, criticality, whether to give illustrations, etc., should be stated explicitly.

Types of assignment: There can be at least three types of assignment:

i) **Essay type:** These are long-answer questions. Such questions should not be selected at

random, but should be carefully chosen to cover some of the objectives at a time, and also with a view to improving the learner performance.

Long essays based on factual information should be avoided. You should ask detailed questions which can give learners an opportunity to display their critical thinking and analytic abilities. These questions should encourage synthesis and analysis of study material. A single essay could test both the understanding and the application of content, and also provide the tutor with an opportunity to assess the strengths and weaknesses of each learner.

One may think of three types of essay type questions:

Open questions: The learners may be asked to present their ideas openly. In Science, such a type of question may not hold.

Project type questions: The learners may be asked to work on a project i.e., collect data, analyse it, present inferences, etc.

Practical questions: These questions are based on the practical application of the knowledge gained after going through the materials. An internal choice/option can be given in such questions.

2) Short answer questions: The scope of these questions is less than the essay type questions. These questions can provide a large coverage of the content of the materials presented.

3) Objective type questions: Different types of objective type questions such as true/false, filling in the blanks, multiple choice, yes/no, one word answers, very very short questions, etc., can be included in an assignment. Such questions can be marked by a computer. And these questions are not influenced by any bias. They are useful for checking factual knowledge, understanding and application.

Forms of assignment: We use two forms of assignments in distance education — Teacher-marked assignments (TMAs), and Computer-marked assignments (CMAs).

Teacher-marked assignments consist of the essay type, medium-length answer and short answer questions. They may even comprise objective type questions. The questions are designed to allow the distance teacher to check how well the learner has learnt and understood the content material. As the intention is to evaluate the learner, answers to such questions are not given in the text.

The distance teacher who evaluates the assignments may be provided with a marking guide for each question of the assignment. A guide helps ensure that assignments are marked to the same standard.

Teacher assessment also occurs at study centres. Though the teacher has little time for individual contact with learners, he can try to ensure that each individual is coping with the course satisfactorily. The teacher can assess practical work, and can also check whether face-to-face performance is equal to performance on paper, and decide whether any additional help is needed.

Computer-marked assignments supplement or complement the teacher-marked assignments. In distance education, its functions are to test knowledge and understanding. CMAs consist of objective type questions. They are checked by the computer. These assignments are very useful for science and mathematical courses.

At the undergraduate level, normally for a four credit course, we have three assignments — two TMAs and one CMA.

We should make it clear that an assignment covers a block or more. A course writer working on a unit can suggest a question or two to the Editor who will give the final shape to assignments for a course.

4.3 Ending the Unit

The last part of the unit is a **repetition** of what has been discussed in the unit. It helps the learners check whether they have completed all the necessary learning activities, understood the content and learnt all the points. The ending of a unit has the following components:

i) **Summary:** After discussing the content in detail, the important points should be summarised. The summary will supply feedback to the learners. Thus the learner is aided to recall the important points in the text. There may be two main purposes of the summing up of the unit.

a) **Recapitulation:** The summary of the unit will help the learners recapitulate the important learning points discussed in the unit. The statement of the important points will also help them retain whatever they have read in the unit.

b) **Reinforcement:** Through the summary of the unit, the learners remain motivated for further learning. They feel themselves capable of managing learning without much external support.

A unit may be summarised in several forms. Sometimes it is presented as a checklist. The summary may be a list of the key points that have been covered. For example:

LET US SUM UP
<p>In this Unit, we have described the structure of a course unit and explained what characteristics of self-instructional texts we expect to find in them. Here are the main points.</p> <ul style="list-style-type: none">i) The terms 'aims', 'objectives', 'units', 'assessment questions', 'assignments' and 'essential texts' are all used as technical terms in distance education, although agreement on usage is not yet universal.ii) Units normally begin with a statement of objectives and an introduction.iii) The main body of the text contains step-by-step presentation of topics and frequent reinforcement and feedback.iv) Units end with a summary and assignment or a form of test. <p>Distance education materials are characterised by requiring some form of contact with a teacher or tutor in that they are a component in a teaching-learning system. Some self-instructional materials can be used entirely independently.</p>

Example 14: Summary of a Unit

Similarly, the contents of a unit may be summarised in various other ways.

ii) **Glossary:** The glossary will help the learners comprehend the concepts discussed in the text. It refreshes and clarifies the learners' comprehension. (It should also be noted that the inclusion of a glossary is not a must. It depends on the nature and demand of the content discussed.)

It is very important to decide as to what is to be glossed. Should it be a difficult word, a concept already discussed in the unit or key words? Which words are key words? When you write a glossary, you should be more cautious in judging the importance of words to be glossed.

- When we write in the language of a discipline, the learners have to make efforts to learn that language (the jargons used in that particular discipline). At times, while explaining the content, we do not explain the words/terms, such words/terms should be glossed.
- The key words, difficult words and the **neutral/multimeaning** words should be glossed at the end of the unit.
- Those words/terms should be glossed which you feel need elaboration for better comprehension. The glossary may contain working definitions of all the new concepts introduced in a unit.

See an example taken from our IGNOU courses:

GLOSSARY

Actuality: Shots of real events, as opposed to the artificially contrived ones such as drama.

Alphanumeric: A typewriter with number buttons listed separately.

Amplifier: A device for increasing the strength of an electronic signal.

Animation: Creating the illusion of movement, for example, frame-by-frame shooting of progressive changing graphics, skills, models or puppets.

Bridge: An electronic switch or connection point that allows many information circuits to be connected so that each circuit or line has equal to the information in the system.

Decoder: A gadget to transfer the audio and/or video signals into the message.

Disc Storage: Amount of information (data of any kind) stored in a magnetic disc.

Editing: Changing ordering shots, electronically, in order to create the desired programme effects.

Electric Circuitry: A set of electrical parts intended for some special purpose.

Electronic Mail: Where the student is able to address questions to the tutor and receive immediate feedback.

Enrichment Programmes: The programmes which are less directly related to the curriculum, but intended to contribute new insights, experiences, variety and enjoyment.

Floppy Disc: Thin magnetic disc to store information.

Format: The relationship between programme components: a combination of production style, presentation techniques and technical methods, for example drama, documentary, etc.

Frame: Total single picture which runs 1/30 second in television.

Example 15: Glossary

You should also note that if the word in the text is a noun, it should be defined as a “noun” and in the same way if it is an adjective, it should be glossed as an adjective. And lastly, it is the contextual meaning that should be presented in a glossary.

iii) **Suggested/Useful books:** Many courses require learners to read some extra material in addition to the course units. Sometimes an extra text is essential while on other occasions, it may be entirely optional. While suggesting additional books following criteria should be taken into consideration:

- Is the book easily available?
- Is the book relatively cheap?
- Is the book readable?

The suggestion is that the listed books should be useful for the learners and should be easily available at reasonable prices. The presentation of the content should be simple and readable so that the learners can get something more out of these books.

Three/four such books may be recommended for further reading in the following format:

Name of the author	Year of publication	Title of the Book	Publisher	Place of publication	Chapter & page
--------------------	---------------------	-------------------	-----------	----------------------	----------------

For example:

Rowntree, Derek (1986) Teaching Through Self-Instruction, Kogan Page, London

iv) **Answers:** Under answers you may present the answers to all the self-check questions, exercises, etc., set in the text. For easy reference the answers need to be numbered the way the corresponding questions have been numbered. In certain cases both the questions and the answers may be presented in a different colour

5 REVIEW OF THE UNIT

The course writer may try his unit out in a pilot form before it is handed over to the institute. Where it is not possible to try out on the target group, we can find comparable population for reviewing. The review of a unit will give an idea as to how learners would react to the material and what necessary improvements must be incorporated. The review of the unit should be quick and efficient.

There can be four (at least) features of a unit which may be considered instrumental in producing instructional effects, namely

- a) Appeal
- b) Comprehensibility
- c) Internal compatibility
- d) Action eliciting potential

In a review we test these features of the unit, may be with the help of a questionnaire or by seeking reviewers'/learners' comments.

- a) The appeal of a unit has to do with its ability to hold the attention of the learners. Because the learners study independently and can turn away at any time, it is important to maintain high appeal on moment to moment basis. The course writers should judge whether the unit is capable to sustaining the interest of learners. You can give the unit to two-three learners to read. People can sit in a room and work through the unit. You watch them as they study. You can note the time the learners take to complete and observe when they look puzzled or get struck. This can be done at any study centre.
- b) The comprehensibility of the unit has to do with the manner in which the content is interpreted by the learners. Comprehension tests can be administered on the target group of learners. These tests reveal the learner's ability to grasp what has been discussed. The objective of testing the comprehensibility of the unit is to discover the strengths and weaknesses of the unit design variables with the purpose of improving upon them. To

know the level of the language, you can ask the learners to underline words/sentences they do not comprehend.

- c) The internal compatibility of a unit has to do with the relationship of various elements appearing within the unit. The unit design features should be such as increase the degree of compatibility. The internal compatibility will reveal whether the various learning points are linked together logically. This feature can be reviewed by showing people the unit and asking their specific comments. You may find people who know the subjects.
- d) The action eliciting potential of a unit includes the features such as verbal behaviour and physical acts of the learners. Action also include integrating separately presented information and forming new concepts. The course writers have to see whether the unit has the potentiality to generate some relevant action among learners. For this, you can ask people/a group of learners to go through and write answers to the questions on the unit. You can check what the learners are doing.

6 SUMMARY

In this handbook we have tried to show as to how self-instructional materials can perform the functions of a classroom teacher, and thereby how a distance learner may have the very learning experiences which a student may have in classroom situations. One may feel that the guidelines given in this handbook are too many to keep track off, and that it may be difficult for course writers to accommodate all of them while writing a unit. To this we say that what has been suggested in this handbook is an elaboration of the issues involved in writing self-instructional materials, an attempt to link theory to practice. We reduce the entire discussion to two notions —

- access devices
- learner-activities

Access devices are those means which help the learner to reach (grasp) what is presented in the unit. Obviously, structure of the unit, objectives, introduction, section/sub-section headings, diagrams, glossaries, etc., are all access devices which we have discussed in this handbook.

Under learner-active materials, we have discussed those built-in strategies which are meant to motivate the learner to sit up and be engaged in various types of academic exercises, such as answering questions, jotting down points, explaining the concept, collecting some material, etc.

This brings us to the principles of unit design. Here, the course writer has to decide on the best possible sequence/arrangement of the content of the unit. Learner-active materials consist of sections and subsection presented in a logical arrangement.

Sources

- IGNOU (1988). DE-3, Block 1,2 & 3. Diploma in Distance Education, New Delhi
- Jenkins, Janet (1985). *Course development: A manual for editors of distance-teaching materials*, International Extension College, Commonwealth Secretariate United Kingdom:
- Jenkins, Janet (1979). *Writing For Distance Education: Manual*, International Extension College, U.K.
- Perraton, Hilary (1973). *The Techniques of Writing Correspondence Courses*, International Extension College U.K:
- Rowntree, Derek (1986). *Teaching Through Self-Instruction*, Kogan Page, London/Nichola Pub. Comp. New York.

**List of Study Centres where Diploma in Distance
Education Programme is being Offered as on 19.1.89**

Sl.	Code No.	Study Centre
1.	0101	Hyderabad
2.	0401	Gauhati
3.	0501	Patna
4.	1201	Jammu Tawi
5.	1301	Bangalore
6.	1401	Trivandrum
7.	1501	Bhopal
8.	1502	Jabalpur
9.	1601	Bombay
10.	2101	Bhubaneswar
11.	2102	Cuttack
12.	0601	Chandigarh
13.	2501	Madras
14.	2801	Calcutta
15.	0701	Shivaji College, Delhi
16.	0702	Vishva Yuvak Kendra, Delhi
17.	0703	S.V. College, Delhi.
18.	0704	K.M. College, Delhi
19.	1202	Vishwa Bharati Womans' College of Education, Srinagar
20.	0901	IAS Centre, Gujarat University, Ahmedabad.
21.	2708	P.G. Govt. College, Varanasi.

ACADEMIC PROGRAMMES ALREADY LAUNCHED

- *Bachelor's Degree Programme (B.A. & B.Com.,)*
- *Diploma in Management (Module I & II)*
- *Diploma in Distance Education*
- *Diploma in Creative Writing*
- *Certificate course in Food & Nutrition*
- *Certificate course in Rural Development.*

ACADEMIC PROGRAMME TO BE LAUNCHED

- *Bachelor of Library & Information Science*
- *Diploma in Management (Module III & IV)*
- *Bachelor of Science*
- *Certificate course in Computer Applications for Office Management*
- *Diploma in Higher Education*
- *Diploma in Rural Development*
- *Diploma in Food & Nutrition*
- *Diploma in Child care & Education*
- *Advanced Diploma in Distance Education*
- *Diploma in Creative Writing in Hindi*
- *Certificate Programme in Water Resources Management*
- *Certificate Programme in Energy Conservation & Management*
- *B.Tech. in Water Resources Management & Energy Resource Management*